THE FACTORS THAT AFFECT THE SELECTION & TAILORING OF SOFTWARE DEVELOPMENT PROCESSES

by

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ABSTRACT

The software industry has shown tremendous growth in Sri Lanka, and shows a lot of potential to grow further to be a dominant foreign exchange earner for the future. It is also an industry that requires less investment and provides high returns in a very short period of time. Therefore the government has shown keen interest in developing this industry and has embarked on various projects funded by foreign agencies to develop Information Technology literacy and infrastructure.

However, the standards of software development varies significantly from company to company, and therefore it requires some input to make sure that we achieve some acceptable minimum which will enhance the image of the industry as a whole. The research was to find out how software process related practices are carried out in various software companies and to come up with some valuable conclusions to help software companies to get a broader view on how significant software processes are on software projects.

The research was carried out taking a sample of 24 software companies that cater to local and overseas markets in a variety of disciplines in software development projects. The sample was selected to include software companies of different sizes, catering to different markets and working on different technologies. The number of companies (24) was determined by the maximum number I could reach during the allocated six month time period. The objectives of the research were;

- To identify the factors that affect the selection and tailoring of a particular process in software development projects.
- To perform a correlation analysis of project successes and failures based on a particular process choice and tailoring decisions in the presence of different factors.

There were 11 factors, identified during preliminary survey, and 18 software processes, based on ISO/IEC standards, that were considered. Based on the responses received and analysis carried out, the following conclusions were made.

1. Organizational policies, standards and procedures play a major role in software processes. The other factors that showed high significance on process tailoring were, industry or the domain of operation, the technology used, the technical complexity of the project, the influence of customer requirements. The project value has shown low influence on software process tailoring and selection against the common belief. The duration of the project is significant only on processes such as management, configuration management and documentation where as project team size shows significant influence on processes such as management, configuration management and problem resolution. Project sponsor is another insignificant factor on process tailoring. When the project team is experienced, it has high impact on management and training processes only.

2. The correlation analysis carried out concludes with 99.9% confidence that there is positive correlation between process decisions and project success/ failure. Here the correlation analysis was done when the process decisions were made under varying factors. Therefore the importance of selecting appropriate software processes and tailoring according to various needs was justified through the analysis.

Based on the analysis and discussion the following recommendations were made for software process tailoring.

1. Organizational policies, standards and procedures should be carefully laid down since it has vary high influence of software processes
2. Selection of technology and the size of the team should be appropriate for the project since it has very high bearing on software processes.
3. Those projects that are highly complex should be given due consideration since the software processes are highly sensitive to the level of complexity of the project.

4. Customer requirements should be understood and finalized properly in order to make sure that the processes are properly tailored to fulfill customer needs and expectations.
5. Process tailoring has to be done to suit the particular type of project.

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DECLARATION

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To the best of my knowledge, the above particulars are correct.

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LIST OF ABREVIATIONS

BoK	-	Body of Knowledge
COTS	-	Commercially Off-the-shelf
IEC	-	International Electro-technical Commission
IS	-	Information System
ISO	-	International Standards Organization
IT	-	Information Technology
SEI/ CMM	-	Software Engineering Institute/ Capability Maturity Model